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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,673	10/29/2001	Richard A. Nygaard JR.	10011219-1	1420

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EXAMINER

TSAI, CAROL S W

ART UNIT PAPER NUMBER

2857

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/020,673

Applicant(s)

NYGAARD, RICHARD A.

Examiner

Carol S Tsai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 is/are allowed.
- 6) ☒ Claim(s) 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

“37” at page 10, line 3.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Reference No. “42” in Fig. 4.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described

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in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 2, it is not clear what is meant by “a transition detection circuit”, since there is no clear, specific, and detailed explanation provided in the Specification. “The subject matter of the present Application includes a transition detection circuit usable in a logic analyzer adapted to perform eye diagram measurements, or in a stand-alone circuit for that purpose” described at page 1, lines 4-5 of Application’s “Reference to related Application” is the only disclosure provided by the Applicants. However, Applicants do not provide any further information in the “Description of the Preferred Embodiments”. Applicants are required to provide detailed information in response to this action.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, it is not understandable what is meant by “a transition detection circuit coupled to the delayed clock signal and to the delayed logical data signal, and having an output producing a transition signal indicative of a transition in the delayed logical data signal occurring during a selected length of time subsequent to a transition in the delayed clock signal”.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 2, as best understood, is rejected under 35 U.S.C. 103(a) as being obvious over U. S. Patent No. 5,210,712 to Saito in view of U. S. Patent No. 4,445,192 to Haag et al.

Saito discloses an eye diagram analyzer comprising: a variable clock signal waveform delay circuit having an input for receiving a clock signal and an output producing a delayed clock signal; a threshold detector having a variable threshold, an input for receiving a data signal to be measured as an eye diagram and having an output producing a logical data signal; a variable data signal waveform delay circuit having an input coupled to receive the logical data signal and an output producing a delayed logical data signal; a transition detection circuit coupled to the delayed clock signal and to the delayed logical data signal, and having an output producing a transition signal indicative of a transition in the delayed logical data signal occurring during a selected length of time subsequent to a transition in the delayed clock signal and a counter coupled to the transition signal and that counts occurrences thereof (see col. 14, line 31 to col. 15, line 4).

Saito does not disclose a memory whose content is organized as a data structure indexed by the difference in delays for the variable clock signal waveform delay circuit and the variable data signal waveform delay circuit, by the variable threshold, and that stores in an indexed location the number of counted occurrences.

Haag et al. teach a memory whose content is organized as a data structure indexed by the difference in delays for the variable clock signal waveform delay circuit and the variable data signal waveform delay circuit, by the variable threshold, and that stores in an indexed location the number of counted occurrences (see col. 5, lines 40-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Saito's method to include a memory whose content is organized as a data structure indexed by the difference in delays for the variable clock signal waveform delay circuit and the variable data signal waveform delay circuit, by the variable threshold, and that stores in an indexed location the number of counted occurrences, as taught by Haag et al., in order to store state or time counts and sampled data states in response to the events detected by the index module (see Haag et al. col. 5, lines 54-56).

Allowable Subject Matter

9. Claim 1 is allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

U. S. Patent No. 5,210,712 to Saito in view of U. S. Patent No. 4,445,192 to Haag et al. are references closest to the claimed invention. Saito in combination with Haag et al. disclose a method of measuring a data signal to create an eye diagram of that signal, the method comprising the steps of: (a) setting a hits count to zero; (b) comparing the instantaneous voltage of a clock signal associated with the data signal to a clock threshold voltage to produce a logical clock signal; (c) delaying the logical clock signal by a selected first amount to produce a delayed logical clock signal; (d) comparing the instantaneous voltage of the data signal to be

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measured to a data threshold voltage to produce a logical data signal; (e) delaying the logical data signal by a selected second amount to produce a delayed logical data signal; (f) delaying the delayed logical clock signal by a selected third amount to produce a doubly delayed logical clock signal; (g) capturing the value of the delayed logical data signal in response to the delayed logical clock signal;. However, Saito in combination with Haag et al. do not teach (h) capturing the value of the delayed logical data signal in response to the doubly delayed logical clock signal; (i) incrementing the hits count each time a value captured in step (g) is different to that captured in step (h); (j) repeating steps (b) through (i) until a selected condition is satisfied; (k) subsequent to step (j), storing the count of step (i) in a data structure indexed by the difference between the first and second amounts and by the data threshold voltage; (l) repeating steps (a) through (k) with different combinations of the data threshold voltage and difference between the first and second amounts; and (m) generating an eye diagram from the hits counts stored in the data structure; and including all of the other limitations in the respective independent claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dollard discloses a decoding system having a clock recovery system for maintaining the optimum time for sampling a signal.

Schlag et al. disclose a method and a regenerative filter for equalizing an input digital

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signal being proposed, wherein the received input signals is processed by means of threshold decision elements, multiplexers, and a delay unit, which regenerates a delayed signal for switching the multiplexer, wherein the input signal passes in parallel through at least threshold decision elements and the output signals of the threshold decision elements are connected by at least one multiplexer to the delay unit and the delay unit is comprised of at least two delay stages, whose delayed signals switch the at least one multiplexer .

Kobayashi et al. disclose an automatic amplitude equalizer for compensating an amplitude characteristic of an input signal, wherein a control signal for equalizing an inclination amplitude distortion of an input signal is detected making use of a pair of digital demodulated signals to compensate for the amplitude characteristic of the input signal with a high degree of accuracy and which can be constructed with a reduced circuit scale and at a reduce cost.

Guo discloses an all digital data algorithmic recovery method and apparatus which operates at jitter greater than 25% and where run length is more than 1000 bits and which uses self calibrated delay elements to phase align a locally generated time ruler reference with the data average transition position to reliably establish the sampling time for retrieving data from an incoming binary sequence at the center of the data eye.

LaRosa et al. disclose a clock recovery circuit employing a method of and apparatus for adjusting the phase of a recovered clock signal.

Marzalek et al. disclose a sampling signal analyzer in which the frequency of an input signal to be measured is initially ascertained, an appropriate sampling frequency is then determined, data needed to reconstruct the wave form of the input signal is acquired, and the input signal wave shape is reconstructed with a calibrated time axis and preferably displayed.

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Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. Tsai whose telephone number is (703) 305-0851. The examiner can normally be reached on Monday-Friday from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703) 308-1677. The fax number for TC 2800 is (703) 308-7382. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (703) 308-1782.

In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 308-7382. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. Tsai

06/10/03


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